ON THE

IMMEDIATE TREATMENT

OF

STRICTURE OF THE URETHRA.

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IMMEDIATE TREATMENT

OF

STRICTURE OF THE URETHRA,

BY THE EMPLOYMENT OF THE

"STRICTURE DILATOR."

BY

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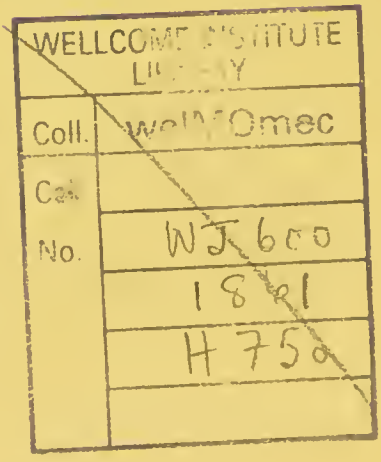

PREFACE.

The greater portion of the following remarks has already appeared in the pages of the 'Medical Times and Gazette,' but in preparing them for re-publication I have appended some observations on the relative merits of the treatment I propose, as contrasted with the various operations by incision; and have also added some cases to illustrate more fully some of the points on which I have insisted.

I have lately been able to examine the effects of forcible dilatation upon a stricture after the patient's death from another cause,—a point of much interest; and the description, with a drawing of the preparation, which was exhibited at the Pathological Society of London, will be found at the end of the book.

The fatality that attends the uninterrupted course of a serious stricture, is but too certain. All practical Surgeons are acquainted with the complications and suffering resulting from a disease, which, if taken in time, *is always amenable to treatment.* If, therefore, any means can be employed, by which all serious results can be obviated, and the treatment at the same time be made so simple as to be available by the majority of Surgeons, it will, perhaps, be admitted that a step has been gained in the right direction. Hitherto I have not ventured to publish my experience of the plan I adopt, simply for the reason that it is injudicious to enunciate any new method of treatment which has not been subjected to numerous and repeated trials; but having now operated upon more than 100 cases with unvaried success, not only in private but also in Hospital practice, where every opportunity has been afforded to the profession of witnessing the treatment and its results, I now

feel justified in submitting that experience to the judgment of my professional brethren, and shall endeavour to frame such clear rules for their guidance, that, in any intelligent hands the operation may be as successful as it has been in my own. Up to the present time, this method of treatment, although adopted by some Surgeons, has been mainly confined to myself, simply, I believe, from the fact that its general utility never having been published, it has not, as yet, been appreciated. Let me indulge a hope that, should I be fortunate enough to express myself so clearly as to be generally understood, the performance of the operation may become extended.

In conclusion, I would only deprecate the prejudices which exist in the minds of Surgeons, against any novelty in the treatment of a common disorder, and request an unbiased perusal of the following pages.

14 Savile Row,
December, 1861.

STRICTURE OF THE URETHRA,

&c. &c.

The benefits which the illustrious brothers William and John Hunter have conferred upon mankind can hardly be exaggerated. By introducing into pathology the finely inductive reasoning which had previously characterised their physiological speculations, they elicited a system of enlightened principles which has thoroughly humanized every branch of the healing art. Nature, these great teachers clearly showed, was the only safe instructress in pathology and in therapeutics, and a careful and patient study of her processes in health and in disease formed the only reliable basis for successful practice. Out of the school of these eminent medical philosophers issued many distinguished disciples, who, by their writings, lectures, and example, have

spread a knowledge of the Hunterian system throughout these kingdoms, and even awakened a surmise of the nature of these important truths in France and Germany. The pre-eminent abilities of Baillie, Abernethy, and Denman gradually moulded the practice of medicine, of surgery, and of midwifery in subjection to the Hunterian principles. A careful interpretation of Nature was the rigidly enforced rule. All rash, meddlesome, and coarse methods of treatment were denounced, the *vis medicatrix* was perpetually appealed to, *arte non vi* was constantly ejaculated. The late excellent surgeon, Mr Lynn, an eminent pupil of Hunter, used, in his eccentric way, often to say, "*Nater*, gentlemen, *Nater* cures the disease."

Without doubt, this habitual subjection of the mind to the careful contemplation of natural processes was at the bottom of the marked improvement which, of late years, has taken place in every department of our art. It is a weakness of the human mind, however, to oscillate from one extreme to the other. In medicine, from the extreme of heroic doses, and a licentious use of the lancet, the practical pendulum vibrated to homœopathic globules and a supinely-expectant treatment. In mid-

wifery, from excessive instrumentation, the accoucheur has occasionally fallen into a helpless acquiescence in avoidable evils; and in surgery even an affected aversion to the knife has too often seduced the operator into a fatal procrastination.

The "native hue of resolution," which is nowhere more necessary than in the practice of surgery, has not, perhaps, in any class of affections been so injuriously "sicklied o'er," as in certain obstinate forms of stricture of the urethra. Mr. Abernethy's denunciations of all violence in catheterism as being inconsistent with the main purpose of the remedy—viz., the absorption of the material of the stricture—has had a greater effect than he probably contemplated. A timid and dilatory treatment has been the result, and in too many instances the supineness of the surgeon has permitted the case to drift to a fatal termination. It is a sad truth that "*Nater*" will not cure a chronic stricture.

My attention was early attracted to the prevailing defects in the treatment of strictures. I could not but observe the tediousness of the treatment by ordinary dilatation, occupying many months before an average instrument could be introduced into the bladder,

and that even when the dilatation was accomplished, the constriction generally returned, so that perpetual surgical care was required.

Being deeply impressed with the unsatisfactory nature of the prevailing methods of curing these distressing maladies, about seven years ago I adopted a more energetic mode of treatment, and invited the notice of the profession to a new "Stricture Dilator." Its use was at first limited to simple dilatation, which was readily effected by graduated tubes passed between the blades without the withdrawal of the original instrument. Experience, however, soon showed me that, as a general rule, when dilatation was carried much beyond the degree produced by ordinary bougies, "stricture fever" was induced. I therefore determined, though with some apprehension as to the

consequences, *to split the stricture* by passing the largest-sized tube at once, and thus immediately to enlarge the contracted part of the canal, so that it might receive a catheter equal to the normal size of the urethra.

Fearing the effects of the urine being permitted to come in contact with the laceration thus occasioned, I kept a gum elastic catheter in the bladder, but as this measure gave rise to considerable irritation, I determined to content myself with simply splitting the stricture, drawing off the urine, and not again using the catheter till two days after the operation. After that interval, an instrument of the same diameter as that used at the time of the operation was again employed, and its use was continued—first, on alternate days, and, subsequently, at longer intervals. Experience has shown, indeed, that instances occur in which it is necessary to use a catheter one size smaller than that first passed after the operation, but such cases are exceptions.

The instrument by which this simple process is accomplished consists, as is shown in the drawing, of two grooved blades fixed in a divided handle and containing between them a wire welded to their points, and on this wire a tube (which, when introduced between the blades

corresponds to the natural calibre of the urethra) is quickly passed, and thus ruptures or splits the obstruction. The simplicity of this apparatus is obvious to all, and the history of above a hundred cases proves that its use is unattended by any of those serious complications—viz., hæmorrhages, false passages, infiltration of urine, perinæal abscess, fistulæ, swelled testis, &c., &c.—which too often accompany the other operative processes devised for the relief of this malady. The forcible distension caused by the dilator affects the morbid obstruction only; the healthy portion of the canal is not disturbed, the slightly vascular character of the strictural deposition at the same time gives rise to but very inconsiderable bleeding, and perfectly obviates infiltration into the surrounding tissues.

The method of performing this operation may be described in a very few words. The permeability of the canal having been once satisfactorily ascertained, the size of the meatus of the urethra is to be gauged by passing into it a sound that will conveniently fit, and the number of the sound so used is to be the number of the tube to be passed: it is important to ascertain this, so that the urethra may not be stretched beyond its natural limits, for while

the urethra of one person will admit of No. 14, another will not admit more than No. 9.

The dilator having been previously well oiled, is to be introduced with the handle somewhat over the patient's left hip, and by keeping the convex portion gently pressing against the under part of the urethra, the point will glide along the upper portion until it is fairly beyond the triangular ligament, when, by bringing the handle to a right angle with the body, and gradually depressing it—but not so much as in the passage of an ordinary catheter—it will usually slip into the bladder; in fact, the same proceeding is to be adopted as in introducing a lithotrite for the purpose of crushing a calculus. Having reached the bladder, the dilator should be gently rotated, to prove that it is fairly within that viscus, and being thus assured, the Surgeon is next to place the point of the tube he had previously selected, upon the wire between the blades, and thrust it quickly onwards to the end. The stricture being now fairly split, the dilator should be rotated to still further separate the sides of the rent, and then be withdrawn; a catheter corresponding to the number of the tube being substituted, for the purpose of removing the urine. The catheter is then to be taken out,

and the patient sent to bed, with directions to take, every four hours, for the first day and night, a mixture containing in each dose two grains of quinine and ten minims of the tincture of opium. The facility with which this proceeding can be effected will of course depend upon the kind and number of the strictures, and the existence or otherwise of false passages, or fistulæ in perinæo. The urine having been withdrawn, the patient does not require to pass water for some hours, and when compelled to do so, the stream is usually larger, and the urine passes with greater facility than before. On the second day from the operation, the same catheter should be gently introduced; but, if the patient complains of much scalding, it will be better to take one size less. This should be repeated every other day for a week, when the larger one may be substituted, and the patient be taught to pass his own instrument. Of course the time occupied in the after-treatment must vary with the nature of the case, and the more obstinate forms necessitate the employment of the catheter for some time, the intervals being gradually increased until it is not required to be used more than once in three, four, or six months, and in most instances, not more fre-

quently than once a year. The bowels should be relieved by a dose of castor-oil taken early on the morning of the operation, and the patient should be directed not to pass water for two or three hours previously, in order—first, to facilitate the introduction of the dilator; and, secondly, to permit its free movement in the bladder.

A perusal of the following cases, which are extracted as salient examples from a long series, and which were, for the most part, witnessed through their whole career by the students of the Westminster Hospital, and by those Surgeons who favour that institution by their attendance, will, I think, corroborate the points which I wish to establish, and, I hope, justify me in upholding as proved the following conclusions:—

1. That the operation is of the most simple kind, and that anyone who can pass a bougie through a difficult stricture is competent to perform it.

2. That it is not attended with hæmorrhage, infiltration of urine, abscess, or any serious local mischief.

3. That in the majority of instances the relief is immediate.

4. That the occurrence of rigors, or any

other constitutional disturbance, is very rare, and the patient is seldom confined to bed longer than from twelve to twenty-four hours.

5. That the urethra is immediately made permeable by a catheter of full size, which may be ever afterwards passed at discretion.

6. That this method is available in every kind of stricture where a canula of any size can reach the bladder.

7. That when the after-treatment is judicious and attentive, the full capacity of the passage is always maintained.

8. That in all cases of neglected after-treatment, the stricture yields again to this method more promptly than to any other.

9. That, it being impossible that any but the diseased tissue can be divided, the splitting of the stricture has a decided superiority over any cutting operation.

10. And, to sum up the great advantages in one proposition, that the process is facile, speedy, prompt in its effects, and free from every danger, immediate or remote.

The course of general treatment will naturally vary, according to the kind of obstruction, the number of strictures, and the occasional complications of contracted bladder, enlarged prostate, fistulæ in perinæo, false

passage, &c. In simple stricture, however narrow, the relief will be immediate, but in the more complex forms of these maladies, the size of the stream is not increased so directly as might have been anticipated from the immediate enlargement of the canal. Notwithstanding, however, that the size of the stream may for a short time remain somewhat restricted, the patient is able to empty his bladder much more quickly and effectually than before, and has less frequent micturition. The limitation of the jet evidently depends upon the thickening of the surrounding textures, and swelling of the mucous lining; these morbid states speedily subside, and in a short space of time the patient can void his water in a normal manner.

CASE I.

Stricture of Twenty-five Years' Duration—Severe Constitutional Disturbance—Recurrence of "Stricture Fever" after each attempt to introduce a Catheter—Retention of Urine—Hæmorrhage—False Passage—Operation—Recovery.

Thomas W., aged 50, a labourer, of dissolute habits, was admitted into the Westminster

Hospital under my care, on November 5, 1857. He had been the subject of stricture for twenty-five years, during which period the stream has been gradually contracting, and the urine is now passed *guttatim*. Five years since he was an in-patient at St. Thomas's Hospital, where, after considerable difficulty, a No. 1 catheter was introduced and retained, being replaced by others, in succession, until No. 6 could be passed, when he left. The contraction speedily recurred, and he was admitted into the Westminster Hospital as above. He is now greatly emaciated, with brown and dry tongue; pulse 110; countenance pallid; appetite defective; abdomen tympanitic; nights restless; and there is a constant escape of fæces during the straining to evacuate the bladder, an effort which he is compelled to repeat every hour and a half. The house-surgeon having twice failed in passing a No. 1 catheter, each attempt being followed by syncope and subsequent rigors, I now saw the patient, and directed the nightly use of the warm bath, and prescribed salines with opium through the day, and castor-oil every morning. At the expiration of a week his general condition was sufficiently improved to justify the attempt to introduce a No. 1

catheter, when a stricture was detected five inches from the meatus, through which it was impossible to penetrate. Although the examination was conducted with the greatest gentleness, it was followed by a severe attack of "stricture fever," which was only relieved by the administration of opium. The urethra being irritable, and the patient much exhausted, another week was permitted to elapse, during which time quinine and stimulants were administered, but the second trial was likewise futile, and followed by precisely the same results as the first. After the lapse of a third week, and while the patient was fully under the influence of opium, a third attempt was made, but with no better success. I therefore determined to place the patient thoroughly under the influence of chloroform, when, after very considerable difficulty, a No. 1 catheter was introduced, and a pint of highly-offensive and turbid urine withdrawn. In the evening he had retention, which, after great difficulty, was relieved by a No. 1 gum catheter; there was considerable hæmorrhage, the patient losing from ten to twelve ounces of blood. He passed a restless night, and being unable to make water, the catheter was again had recourse to. (The house-surgeon having un-

fortunately omitted to retain the former one.) As it was found to be impracticable to re-introduce it, the man was again anæsthesiated, and another attempt made, but although the catheter passed to its whole length no urine followed, and it was evident a false passage had been made. Opium and the warm bath were had recourse to, and in a few hours a small quantity of bloody urine escaped and continued to dribble away during the day and night.

When I saw the patient on the following morning, his tongue was dry and brown; pulse feeble and rapid; skin hot, dry, and blanched; and he complained of great tenderness upon pressure over the lower part of the abdomen; he was immediately ordered calomel and opium every four hours, and a turpentine fomentation over the seat of pain. For the next few days he continued in a very precarious state, but the symptoms gradually yielded, and in ten days from the retention the urine was free from blood; his health was, however, so much shattered by the accompaniments of the retention, that a month elapsed before any further instrumental attempt was made. Former experience having shown the impossibility of introducing any

instrument excepting while under chloroform, he was once more anæsthesiated, and the dilator with difficulty passed into the bladder; the large-sized tube was then employed, the stricture fairly split, and the dilator removed. A No. 12 catheter was next inserted, and the urine withdrawn; the bleeding was very trifling. Ordered a mixture of quinine and opium, two grains of the former and ten drops of the latter for a dose. In the evening he felt chilly and uncomfortable, but had no shivering; the urine flowed with moderate ease, and was triflingly tinged with blood.

On the following day he was able to walk about the ward; the urine came away in a small but clear stream; the medicine was omitted, and his ordinary diet resumed.

On the second day after the operation, a No. 12 catheter entered the bladder without the least difficulty; the urethra was tender, but he did not experience so much pain as on former occasions; the after-treatment was continued at increasing intervals, and he shortly left the hospital capable of passing his own instrument.

The foregoing is a case of very considerable interest, as embracing many of the most important points in connection with stricture.

The duration of the disease, the manner in which micturition was accomplished, the deplorable state of the patient's health, the supervention of "stricture fever" after every attempt at catheterism, the after establishment of false passage, and the profuse hæmorrhage, are all evidences of the serious nature of the case, which consequently presented a severe test to the adopted treatment. The history satisfactorily shows the immunity from fatal consequences, rapidity of recovery, and complete restoration of the urethra to its natural size, which are the great characteristics of the operation.

CASE II.

Stricture of Fourteen Years' Standing—Of a Dense Cartilaginous Character—Situated about the Triangular Ligament—Urine, which was Ammoniacal and Purulent, passed Guttatim—Operation—Recovery.

John W., aged 45, a labourer, was admitted in December, 1857, suffering from stricture of the urethra, of fourteen years' duration. Seven years since, the urine having been for some weeks previously passed *guttatim*, he had retention, and applied at St George's Hospital, where after considerable difficulty a

catheter was introduced. He continued an in-patient until No. 4 could be passed, and then left, much improved both in health and manner of micturition. The stricture, however, gradually returned, and after several attacks of retention, and a generally increasing difficulty in relieving himself, he became an in-patient of the Westminster Hospital. At the time of his admission, the urine was passed every hour, with great straining, and frequently in drops; there was considerable hardness in the perinæum, and his health was much damaged, as evinced by emaciation, pallor, loss of appetite, sleepless nights, and general feverishness; the urine was highly ammoniacal, and loaded with mucus and pus. A No. 1 silver catheter was attempted to be passed without success, there was complete obstruction at the triangular ligament, and although the point was firmly grasped, it could not be made to penetrate through the stricture. The patient was kept in bed and the bowels regulated, and on the third day from his admission, another attempt was made in the most gentle manner, but with no better result. Considerable irritative fever followed the two trials, and it was only after the expiration of two months, during which time six endeavours

were made, that a No. 1 catheter was passed. The stricture was of the cartilaginous variety, about an inch in length, and gave that peculiar grating to the catheter so specially characteristic of cartilaginous obstruction. A large quantity of highly-offensive urine was withdrawn, and the catheter was retained. On the following day, a larger size was substituted, and on March 4th, the patient having been placed under the influence of chloroform, the dilator was with considerable difficulty introduced, and the No. 12 tube immediately passed. A No. 12 catheter was then easily slipped in, and the urine withdrawn. On the following day there was no febrile disturbance, and the patient declared he made water better than he had done for many years. On the succeeding day, or second after the operation, the urine was passed in a smaller stream, and with some scalding, consequently a No. 11 catheter was used, the urine being much less fetid than before. The stream continued small for a fortnight, but the urine was expelled in a much shorter time, and the frequency of micturition materially diminished; he now only required to relieve himself three times during the night, and the same during the day. No. 11 having been passed on alter-

nate days, a No. 12 was introduced, and used every third and every fourth day in the manner already described. Six weeks after the operation he left the hospital, making water in a perfectly natural manner, having been taught to pass a No. 12 with ease.

The foregoing, one of a class of strictures that offers the greatest impediment to the introduction of a catheter, is an excellent example of a formidable cartilaginous obstruction situated at a part of the urethra which, corresponding to its curve, gives greater trouble in the introduction of an instrument than any other. The patient had been the subject of a stricture for many years, his urine had for months previous to his admission been passed *guttatim*, his clothes were constantly saturated, and his health was materially damaged by the hourly necessity for relief—an evil which depended upon the stricture, as proved by the large quantity of urine that was withdrawn when a catheter was introduced. All these difficulties were immediately overcome, and a large-sized catheter could be ever afterwards introduced with perfect facility. The offensive ammoniacal condition of the urine gradually abated, that fluid assumed a normal character, and the bladder being no longer

irritated by its retention, the intervals between the times of micturition were prolonged. In a word, the patient was restored to complete comfort without having been detained in bed more than a day, and without experiencing a single unfavourable symptom; indeed, he did not suffer in the same ratio as during the attempt to simply introduce a catheter. To those who are uninitiated in the treatment of stricture, it might appear that, by keeping a catheter in the bladder, and daily increasing the sizes, the same results would have been obtained, but experience proves this plan of treatment to be utterly futile, and that as soon as the catheter is removed, so soon does the stricture return.

CASE III.

Stricture at the Bulb of Twenty-eight Years' Standing—Frequent Attacks of Retention of Urine—Infiltration—Fistulæ in Perinæo and Scrotum—Enlargement of the Prostate Gland.

H. R., a captain in the Navy, aged 58, consulted me after having for many years been suffering from the effects of stricture. He had had repeated attacks of retention of

urine, and upon three occasions matter formed behind and in the scrotum, which eventually gave rise to fistulæ in those situations. At the time of his coming under my care, the greater portion of the urine escaped through these apertures, so that he was always compelled to make water in a sitting posture, or with the aid of an earthenware slipper held between the legs. His clothes were constantly saturated with these dribblings, and his health was materially damaged by constant straining, and the frequency with which he was compelled to make efforts to relieve the bladder. He had been under the care of many surgeons, both in London and elsewhere, but without obtaining amelioration of his sufferings. Having tried various sized and kinds of instruments, I was fortunate enough, at the expiration of three weeks, to get a 0 0 silver catheter through the obstruction. This instrument was retained, and replaced by a larger size, until No. 3 could be passed, when the dilator was introduced, and the No. 12 tube immediately passed. The same after-treatment was adopted as in the preceding cases, and in three months from his first visit he was enabled to pass No. 12 without difficulty. The stream was good, the intervals much longer, and his health better

than it had been for the previous seven years.

Another very similar case may be added—viz.: A gentleman, a solicitor by profession, was affected with a stricture of many years' standing. He had for ten years experienced great difficulty in emptying his bladder, and the urine was loaded with mucus. Upon the first examination, the catheter was arrested at three inches from the meatus; after some trouble it passed on to a second obstruction, near the membranous portion of the urethra, through which it was impossible at the time to penetrate. Upon subsequent trials, however, I got through the second obstruction, and came upon a third, nearer the bladder, which was eventually overcome. The dilator was at once introduced, and the three strictures split. A No. 12 catheter was immediately passed in, and the urine withdrawn. Considerable pain was for a time experienced in this instance in expelling the urine, which was only effected with great straining. The cause, however, of this suffering was speedily apparent, for the patient passed three small calculi, which had formed behind the several obstructions, and were washed away when the urethra became enlarged.

CASE IV.

Stricture in Front of the Triangular Ligament of Eighteen Years' Duration—Several Attacks of Retention—Infiltration and Abscess at the Root of the Penis—Operation—Subsequent Sloughing—Recovery after the Use of the Dilator.

J. R., a man of sallow aspect, was admitted into the Westminster Hospital under my care for stricture. He has been the subject of stricture for eighteen years, during which period he has had several attacks of retention of urine. The urine for some months has been passed *guttatim*, and occasionally in the smallest stream; and a week prior to his admission, during a violent effort to relieve himself, he felt a sharp burning pain at the root of the penis, with slight relief to his urgency, but no urine escaped *per urethram*. In the evening he had a distinct rigor, was feverish, and passed a restless night; and on the following morning noticed that the penis was swollen, of a dusky hue, and painful to the touch; his urine continued to escape in drops. The penis was fomented with warm water; but all his symptoms increasing in severity, at

the expiration of a week he was admitted into the hospital. I detected infiltration of urine, and an abscess at the root of the penis, which was immediately opened; and, to prevent further infiltration, and afford a free outlet for the urine, an incision was made into the urethra in the perinæum, posterior to the stricture, by thrusting in a sharp-pointed bistoury in front of the anus, with the back to the rectum, and cutting upwards and forwards during the straining of the patient. The urethra being opened, a gum elastic catheter was pushed through the wound into the bladder, and the urine thus permitted to escape. The catheter was firmly secured, and a poultice applied to the wound. In the course of a few days the inflammation and swelling of the penis had subsided sufficiently to allow a No. 1 to be tried through the penis, but it was found impracticable to reach the bladder. Upon a second attempt, the catheter went farther, but would not penetrate the entire canal; the third attempt was more successful, and after considerable difficulty, the bladder was reached, and the urine withdrawn. The catheter was allowed to remain until the following morning, when it was replaced by the dilator, and the stricture at once split by

passing a No. 12 tube. My usual plan of treatment was adopted, and the urine withdrawn. On the following day, the patient expressed himself as having passed a tranquil night, without rigors, or even chilliness; the urine flowed in a moderate stream, and with but slight scalding.

On the third day from the operation, a No. 12 catheter was passed without difficulty, and this act was repeated on alternate days for a fortnight; the intervals were then gradually extended, and in six weeks from the operation, the perinæal opening having healed, he left the hospital, passing his own instrument, and making water in a full stream.

The above-recited case afforded another excellent opportunity of testing the efficiency of the treatment, and although undertaken at a time when the patient was hardly recovered from the effects of infiltration, it was attended with signal success; he never had a bad symptom, and in six weeks left the hospital, so far cured that the stricture was entirely under his own control.

CASE V.

Stricture of Thirty Years' Standing—Fistulæ in Perinæo—Incontinence of Urine—Temporary Impermeability of Urethra—Subsequent Treatment by Small and Large Dilators—Recovery.

J. R., aged 62, a well-formed and ordinarily a robust man, but now greatly emaciated, was admitted in 1857 under my care. He states he has been the subject of stricture thirty years, and attributes the origin of the disease to frequently-contracted gonorrhœas. Fifteen years since he was the subject of retention of urine, which was at that time relieved by the introduction of a very small catheter, but being unable to continue in the hospital where he obtained relief, the contraction speedily became worse, and an abscess subsequently formed in the perinæum, which, upon being opened, gave exit to pus and urine, the latter continuing to escape more freely through the perineal opening than through the urethra. He now became an inmate of a provincial hospital, where every endeavour was made to get an instrument into the bladder without success, and he eventually left unrelieved, the urine continuing to dribble away, partly from the urethra and partly through the perineal open-

ing, so that he was compelled to wear an apparatus specially made for the purpose of hindering the urine from saturating his clothes. No treatment having hitherto been of service, he came to London, and placed himself under the care of the late Mr Charles Guthrie, who eventually requested me to admit him under my care. Upon examination, I found his statement to be true, and that the urine continually escaped. A No. 1 catheter was employed, but it was impossible to pass it beyond the membranous portion of the urethra, which appeared to be so encroached upon as to be almost obliterated. Various attempts were made from time to time without success, and he was, consequently, placed under the influence of chloroform, and a No 1 catheter was forcibly passed into the bladder. This was permitted to remain, and on the following day was replaced by a gum elastic one. The patient did not suffer materially from the forced catheterism, but was relieved by the withdrawal of a large quantity of urine, and in three days after passing the No. 1 silver catheter, I was enabled to introduce the dilator, and split the stricture. The patient was then placed in bed, and the mixture of quinine and opium ordered. In the evening he was attacked with rigors, and experienced con-

siderable scalding in passing his water, which he continued to do in a narrow stream, and in small quantities. On the day following he was better, but the urine did not run freely, and on the second day after the operation, the No. 12 catheter was, with some little difficulty, passed into the bladder. A small quantity of urine escaped, and upon this occasion the catheter was allowed to remain five minutes, and was then withdrawn. The same line of treatment was adopted for many alternate days, but with a No. 11 instead of a No. 12 catheter, the stricture being irritable, and not admitting the larger size. A No. 12 was, however, eventually passed, and being taught to use the catheter for himself, the man returned to the country, making water in a full stream, and declaring himself perfectly cured. This patient was under treatment nine weeks.

Three cases of a precisely similar character have been under treatment, where incontinence of urine, the result of over-distension of the bladder, was present, the patient suffering from the absorption of the deleterious properties of the retained urine, the effects of which were recognised by drowsiness, pallor, nervousness, and tingling or itching of the skin. In each case the patient has been subjected to the same treatment, and with similar success.

CASE VI.

Traumatic Stricture—Severe Hæmorrhage—Elastic and Recurrent after Dilatation—Operation—Recovery.

J. H., aged 48, a master-builder, consulted me in June, 1860, in consequence of continued difficulty in passing his water. He stated that five years since, while walking along a roof, he suddenly fell across a beam. His perinæum was seriously bruised, and he experienced great pain in the urethra, from which a considerable quantity of blood escaped. He was taken home, and a Surgeon passed with some difficulty a gum elastic catheter, which was retained. The hæmorrhage gradually subsided, and the catheter was removed. He, however, soon became aware that his urine was passed with greater difficulty than formerly, and that he was compelled to strain a good deal to get rid of the contents of the bladder. He again consulted a Surgeon, who passed a No. 2 catheter into the bladder, and gradually increased the sizes of his instrument until a No. 12 was attained to. The catheterism being discontinued, the stricture soon returned, and he again consulted the same gentleman, who recommenced the treatment, and soon

arrived at No. 12. The convalescence was, however, of short duration, for upon the treatment being discontinued, the contraction speedily recurred. Upon examination, I found no difficulty in passing No. 2, but the stricture would not admit a No. 4, and No. 3 was very tight. I therefore immediately pushed in the dilator, split the stricture, and afterwards passed a No. 12 with facility. This treatment was perfectly successful. There was never the least hesitation in introducing a No. 12 afterwards, and he continued to eject his water in a copious stream without straining and at the ordinary periods.*

CASE VII.

Stricture of Eight Years' Duration—Difficult Micturition—Occasional Retention of Urine —No Complications.

W. B., aged 50, a clerk in a Government-office, was, in 1858, sent to me by Mr Jones, of

* I may refer to two cases of severe traumatic stricture, treated by the same method by Mr Heath, and published in the 'Lancet,' August 31, 1861, as confirming the applicability of this treatment in such forms of the disease.

Kennington, in consequence of stricture of the urethra, attended with a continual difficulty in micturition, and complete retention of urine after any excess. At the time of my seeing him he was suffering from retention, which was immediately relieved by the introduction of a No. 2 catheter. Although there was no special difficulty, upon a subsequent occasion, in introducing a No. 3, yet as it was very tight, and in order to relieve him from his often-recurring retentions, I advised that the stricture should be split. The patient consented. The dilator was introduced, and the stricture immediately split. He was not subjected to the influence of chloroform. The pain was trifling, and after the operation he walked home. Such after-treatment was adopted as has been already described, and he occasionally presents himself to his surgeon, when a large-sized catheter can be passed with ease.

CASE VIII.

In June, 1859, I was consulted by a gentleman who had come from Paris for the purpose of having his stricture split. He had for many years suffered from this complaint, which had latterly become so aggravated that

his urine would only pass in the smallest stream, and occasionally by drops. Upon his first consulting me various catheters were tried without success. Nothing would penetrate the stricture, the point of the instrument becoming entangled in what he described as an old false passage. He was desired to remain perfectly quiet; to take castor-oil every other morning, have warm baths, and renew his visit in a week. Upon the second trial, and after very considerable difficulty, I was enabled to pass No. 1 into the bladder. A considerable quantity of urine was withdrawn, with great relief. He was recommended to avoid exercise, and to come again in three days, when another attempt was made with the No. 1 that had passed before, but without success. A week was, therefore, permitted to elapse before any further trial, when, after continued perseverance, I succeeded with a No. 1, which was allowed to remain for an hour, and was then replaced by No. 2. In the evening he had retention, but it was speedily relieved by the No. 1 catheter. He continued to attend every third day until No. 2 could be passed with some degree of facility, when the dilator was introduced and the stricture split, and No. 12 catheter immediately introduced: the urine

flowed through; and he walked home, having directions to remain quiet, and take the quinine and opium mixture.

On the second day from the operation a No. 12 was freely slipped into the bladder; he had had neither hæmorrhage nor shivering, and the utmost he complained of was a slight scalding. In ten days from the operation, this gentleman passed his own instrument, and in a fortnight returned to Paris, making water with ease, and using No. 12 without the least difficulty.

I saw this patient at the beginning of the present year. The No. 12 can now be passed with the greatest facility. He has never had either retention or difficulty since the operation, and may be considered well.

The cases which have been already narrated are selected as representing the most severe forms of stricture, and as being attended by complications which would materially militate against any ordinary operation, and must have necessitated months of surgical attendance if the dilating plan had been selected. In every one of the recited cases the treatment was successful, and with but a little instruction the patients were enabled to maintain the after-control of the bladder, by occasionally passing a bougie. Although this treatment is

specially advocated in the extreme forms of the disease, it is equally applicable in the milder or less complicated, more especially in cases where strictures are irritable and unyielding, and where catheterism is attended with difficulty and severe suffering.

In such instances the dilator gives immediate relief, and experience has proved that by splitting the stricture, tension is immediately overcome, and the passage of the catheter is made so facile, as to be deprived of any but the most trifling pain. The following cases will best illustrate this :—

J. R., aged 38, a barrister, consulted me in January, 1859, complaining of stricture of the urethra, from which he had suffered for the last eight years. He stated that he had had three attacks of gonorrhœa, the discharge accompanying each attack lingering for a considerable period, and necessitating the use of stimulating injections for its cure. During 1858 his symptoms became much aggravated, he was obliged to strain greatly to get rid of the contents of his bladder, the stream of urine which had become spiral, and occasionally forked, was very small, and his sufferings were further aggravated by the protrusion

of piles during his efforts for relief. He had suffered from retention of urine, which upon one occasion followed a debauch, and on another resulted from inability to relieve himself during a railway journey.

Upon examination, I detected a stricture situated about the membranous portion of the urethra, through which a No. 2 catheter could, without material difficulty, be passed. The stricture was of short extent, apparently cartilaginous, and it grasped the catheter tightly. Having explained to the patient the *rationale* of the operation, he at once consented to its performance. The dilator was, therefore, immediately introduced, the stricture split, and a No. 12 catheter substituted for the purpose of withdrawing the contents of the bladder. There was the slightest possible bleeding, and he stated that the operation was not more severe than the passing of a catheter. I directed him to remain at home during the afternoon, and to take the quinine and opium mixture.

This gentleman continued his attendance on alternate days for a fortnight; he never had the slightest difficulty in passing his water; the pain was very trifling, and a No. 12 catheter slipped into the bladder with the greatest

ease. Being now taught to pass his own instrument, he was discharged cured.

J. J., aged 61, a gentleman, residing in Wales, consulted me in December, 1858, for stricture of many years' duration. He stated that during the previous year, the stream of urine had become materially decreased in size, that he was obliged to pass water every two hours, that the urine was highly ammoniacal and loaded with mucus, that the irritable state of his bladder compelled him to make water the instant he had the desire to do so; and that his clothes were constantly wetted, from his inability to eject the urine in a continuous stream. His rest was broken, and his health materially damaged by the absorption of the obnoxious properties of the retained urine. Upon examination, I detected a stricture at the triangular ligament, which would only admit a No. 1 catheter. The obstruction was dense and unyielding, and about half an inch in length. As the patient was somewhat plethoric, I prescribed a purgative, and requested his attendance on the following day, at which visit the dilator was with slight difficulty introduced, and the stricture split. A No. 12 catheter was now substituted for the dilator,

and the urine withdrawn. In this case, as in the former one, the cure was uninterrupted by a single unfavourable symptom; the patient was merely confined to the house one afternoon, and the same plan of after-treatment having been carried out, he, at the end of a fortnight, returned to Wales, capable of passing his own catheter.

I have had several letters from this gentleman since, in all of which he declares himself free from the slightest difficulty in passing his water or introducing his catheter.

The foregoing cases have been briefly described, and no allusion or comparison has been made to the various kinds of treatment already published. Their perusal must have satisfied the most sceptical that, in every instance where any kind of instrument can be passed into the bladder, the urethra may, by the mechanical effect of the dilator, be immediately enlarged to its natural size; and that while in slight cases this enlargement is effected without suffering, so as to render the inhalation of chloroform unnecessary, yet in the more severe forms that agent facilitates the operation, and secures a perfect immunity from pain. It is quite true that if the after-

treatment is not attended to, the stricture will sooner or later recur, but as the patient by passing his own instrument has the control of the bladder, it can only return as a consequence of culpable neglect. The immunity from accidents having been already proved, the surgeon need have no fear of those serious results which so frequently accompany any cutting operation, and it is no less extraordinary than true that whereas rigors ordinarily supervene after rapid dilatation, they form the exception where the stricture has been fairly split.

It may be asked, what advantages accrue from the performance of this operation, when it is necessary that the after-treatment should be continued for a variable period of time, and why the ordinary plan of dilatation should be abandoned? My reply is—1st, that by its performance a large-sized catheter can be immediately passed, and the patient be speedily taught to use his own instrument; 2nd, that the patient avoids all the suffering incidental to gradual dilatation, and the frequent disappointment of not being enabled to increase the sizes of the instrument; 3rdly, that it secures all the advantages that can accrue from the performance of any operation, and with much

less danger to the patient than by any cutting operation; and, lastly, that the period of recovery is shorter, it does not necessitate confinement to bed, and the patient is saved the expense of being constantly under the hands of his surgeon.

These observations apply to those cases where dilatation can be continued in the ordinary manner; but all practical surgeons know that there are a large number of cases where dilatation is ineffectual in advancing beyond a certain gauge; and here some operation must be performed, if the patient is not to continue a surgical annuity.

I am fully aware that in advocating a plan of treatment by which the stricture is split or torn, prejudices have to be overcome, from the fears which naturally arise as to the extent of the rupture, and the consequences, not only to the urethra, but also to the immediately investing structures. What may be the precise limit of this rupture in the living body I have not as yet had an opportunity of ascertaining, the treatment having been attended hitherto with unvarying success; and when already more than 100 cases have been operated upon by myself, in addition to those where the operation has been undertaken by other sur-

geons, in all of which the treatment has been most efficacious, it is not too much to hope that the danger must be very limited, when compared with any of the cutting operations. What are the advantages of incising the urethra in those obstinate forms of stricture which necessitate some operation? Is it a more simple operation, less dangerous, and possessing any peculiar advantages in reference to a recurrence of the disease? I unhesitatingly state that there are no such advantages, but that, on the contrary, the operation is more difficult, and requires considerable experience for its performance. The operator, in only a very limited number of cases, can insure the limitation of his incision to the strictured part, and for its performance it is necessary that some instrument should reach the bladder. Do the records of these operations give that degree of success which has been attained by the operation I advocate; and, setting aside the complications of hæmorrhage, infiltration of urine, abscess, &c., which so very frequently ensue, does it offer any better chance of permanent cure than the division of stricture by rupture? Is not the after-treatment more tedious, the patient being confined to bed with a retained catheter until the greater portion of the wound has healed; and

when this has united, does it not necessitate the rigid enforcement of the after-passage of the catheter, to ensure a prevention of the contraction?

The only difference between an incised wound and a rent, is that the former, if the edges are left approximated, heals much more quickly than the latter, and so more speedily induces a recurrence of the contraction. It is by stretching the uniting medium of either incision or rent that the cure is to be accomplished, just in the same manner as the orthopædic surgeon extends the soft union of a divided tendon.

Mr Syme, with that ingenuity and surgical skill which have so long placed him in the highest rank of our profession, devoted his attention to the treatment of this most important disease, and devised a plan which, at the time of its publication, offered, in the more obstinate forms of stricture, the best chances of success, more especially when the contraction was situated in front of the anus. But even in the hands of this scientific surgeon, the operation has not been without its attendant evil consequences, and in those of surgeons of less experience, has frequently terminated fatally.

Knowing the dangers incidental to perineal section, various surgeons, both at home and

abroad, have endeavoured to substitute an internal for an external incision, and various instruments have been invented for the purpose of incising the stricture from within; but with all there is the serious difficulty of not knowing with accuracy the exact structure which is being divided, and as the cutting portion of the instrument is usually *set* to divide a stricture, of the extent of which the surgeon is ignorant, it has been frequently found to cut either beyond the thickness of the stricture, or to have divided a portion of the urethra, either in front of or behind the obstruction; hence, the frequent accompaniment of serious hæmorrhage, infiltration of urine, and abscess.

To accomplish either operation, it is necessary that some instrument should pass through the stricture; and when that can be effected, I maintain that no cutting operation is either necessary or justifiable, and simply from the fact, that where any instrument can be passed, there the dilator can enter, and by the introduction of the tube (which, with the dilator, should only represent the natural diameter of the urethra), we can split or tear that which is the seat of obstruction; and as far as I have yet had an opportunity of judging, the obstruction only. There is also another material advantage

which attaches to splitting in preference to cutting—viz., that the surgeon is not obliged to keep any instrument in the bladder, but the patient passes his urine in a natural manner ever afterwards, the catheter being introduced at first on alternate days, and afterwards at longer intervals, until the canal is so far widened that the occasional passage of the bougie will maintain its calibre. While, however, I am unquestionably of opinion, from the large number of cases that I have operated upon, that the operation by rupture is the most feasible, the easiest to perform, and the least dangerous, I do not place it before the profession as a means of cure, unless the after-passage of the bougie is faithfully carried out. We know not at present of any means by which a stricture can be cured without such after-treatment, any more than the orthopædic surgeon knows of any means of curing deformities without the application of some extending apparatus after a tendon has been divided. Our extending, or rather distending, means consists in the introduction of the catheter, or sound, and I care not whether the operation be by incision or splitting, the disease will recur if the contracted part of the canal is not kept dilated for a given time, such period varying

with the nature and number of the strictures, the irritability of the patient, and the complications of false passage, fistulæ in perinæo, &c., &c., which may exist.

The advocates for internal incision affirm, that inasmuch as the knife is applied solely to that portion of the urethra which constitutes the obstruction, they divide the stricture only; I must, however, express my doubt as to the accuracy of this statement, and record my belief that it is quite impossible to determine, at six or seven inches from the meatus, which side of the urethra is thickened; the sound, or cutting instrument, is firmly grasped, and unless the seat of thickening, or deposit, is always the same, it will be quite impossible, from the sensation conveyed to the surgeon, to know which part to incise.

The numerous preparations in the different museums prove that, although the under part of the urethra may be the most frequently diseased, yet that the exceptions are so numerous as practically to render that fact of no value, and that where the obstruction is of the obstinate character met with in the cases I have detailed, the thickening may be taken to be tolerably circumferential.

Suppose it were otherwise, and that the

upper segment of the urethra were not involved, what should prevent the onward passage of a catheter when it has entered the contraction, since the upper part, if normal, would certainly yield, and permit of its passing to the bladder? The truth is, we have no security that, in the employment of a cutting instrument, our incisions are confined to the stricture alone, or even that the weakest part of the urethra may not be divided, and thus give rise to infiltration of urine and abscess, an occurrence by no means unfrequent where such means are employed. Hitherto, any treatment beyond ordinary dilatation has been considered applicable only to cases where the most severe complications are met with, and where the difficulties have been such as to compel the patient to place himself under the care of a surgeon who has great experience in the treatment of such cases; but the ordinary circumstances of cases, as they are usually presented to us, offer no obstacle to their immediate subjection to the practice I advocate. As a general rule, a patient seeks professional aid when a No. 3 or No. 4 can be introduced; and here, no matter what may be the exact pathological change, the stricture may be immediately split, the catheter being afterwards passed upon three

or four occasions by the surgeon, when the further treatment of the case may usually be transferred to the patient, who is now capable of passing his own instrument. The three following cases will best illustrate this:—

J. W., aged 45, consulted me in January, 1858, in consequence of difficulty in micturition, the result of stricture at about six inches from the meatus. His urethra would admit a No. 3, but it was exceedingly tight; and as he was desirous of returning to the country, I advised that the stricture should be immediately split. The dilator was at once passed, and the stricture split, so that a No. 12 catheter could be introduced into the bladder. The urine having been withdrawn, the catheter was removed, and he was directed to return home, and remain quiet the same afternoon. He again presented himself on the second day after the operation, stating that he had no constitutional disturbance, and that the stream of urine was improved. A No. 12 catheter was again introduced, and without any drawback; this was repeated on three occasions, when, as he had been previously in the habit of passing a No. 3, he had no difficulty in introducing a No. 12, and he returned to the country. I have had frequent oppor-

tunities of seeing this gentleman since, but he has never required to consult me again respecting his stricture.

Mr H., a gentleman of colour, consulted me for stricture, situated at the membranous portion of the urethra. He had suffered from difficult micturition for about eighteen years; there were, however, no complications, and his stricture would admit a No. 3, which for some years he had been in the habit of passing. As he was a nervous person, he was placed under the influence of chloroform, when the dilator was introduced, and the stricture split with the No. 12 tube. The 12 catheter was then introduced, and the urine removed. There was scarcely any bleeding; he never had a bad symptom, or took medicine, and in a fortnight returned to Australia, passing his No. 12 catheter, which, with others, in case of fresh cause of difficulty, he procured from Messrs Whicker and Blaize.

Mr B., aged 65, residing at Hampstead, consulted me for stricture of thirty years' duration. He had been occasionally the subject of retention of urine, which was usually relieved by warm baths and opium. When I first saw him, in 1858, I could only introduce No. 1, and as he was in great dread of any operation, I

consented to dilate the stricture in the ordinary manner. By the gradual process, I eventually arrived at No. 8, when, from circumstances, he was compelled to discontinue his attendance; and upon his again consulting me, in the latter part of 1859, the stricture had so far returned that I was compelled to begin *de novo*. This time I persuaded him to have the stricture split, and, without the aid of chloroform the dilator was passed, and the stricture split to No. 13, his urethra being sufficiently capacious to take that size. Although an old man for his age, he never had a bad symptom, and ceased to continue under my care after my teaching him to pass his large-sized catheter, which he accomplished in about three weeks.

Is there, then, any special class of strictures where the operation by rupture is inadmissible, either from the situation, kind, and number of strictures, or from other complications? I believe not; but that there are a large number where any cutting operation must be attended with considerable danger, is now well known. Let us, for example, take a class of cases frequently met with, where fistulæ in perinæo, or elsewhere, exist, combined with great hyperthrophy of all the tissues

in the immediate contiguity of the stricture, and in which considerable time must be expended, and much skill employed before any instrument can be passed into the bladder. Here, to cut into a small groove requires great coolness, determination, and experience; and even when the operator is successful in reaching the groove, and so far dividing the obstruction as to admit a large catheter, the patient is confined to bed for many weeks before union will take place sufficiently to allow of the withdrawal of the instrument. And, again, what is the advantage of dividing a mass of hypertrophied tissue which does not encroach upon the canal, but necessarily intervenes between the knife and the urethra? If the diameter of the urethra can be enlarged to the same extent without such a proceeding, and a free outlet afforded for the urine, the hypertrophy will diminish, and the parts will eventually be restored to their original integrity.

But let me refer to another class where three or more strictures of varying density exist at different parts of the canal. Is the urethra to be laid open from end to end, or can the three obstructions be divided by internal incision at one and the same operation? I have seen these operations performed by the best

surgeons in London, where no possible objection could be urged against their anatomical knowledge, their surgical experience, or their operative dexterity under the most trying circumstances; and I regret to say that they have not been without a fatal issue. No doubt it looks more surgical to place a patient in the position of lithotomy, and undertake a difficult piece of dissection in his perinæum, than to simply introduce an instrument, and pass a large tube, as it were, blindly between its blades, but the results of such cases warrant me in doubting the wisdom of such a proceeding, when the same result can be attained in another manner without difficulty or danger.

Hitherto I have only considered the applicability of the dilator, so far as rupturing or splitting the stricture is concerned, but it is equally efficacious where dilatation is desired, and possesses an advantage over every kind of bougie or sound in its power of dilating a stricture to any required extent without being withdrawn. All practical surgeons know that, having, for instance, had some difficulty in passing a No. 1, it is frequently impossible to introduce a No. 2 at the same visit, whereas, having once introduced the dilator, its diame-

ter can be increased to any extent the surgeon may desire; for this purpose it is not necessary that consecutive tubes should be passed, as by introducing at once a No. 8 or No. 9, and very gently pressing the tube onwards between the blades, they become separated to a considerable distance from the point of the tube, as is excellently shown in the drawing (page 4). By this means (which, however, occupies some little time) the stricture being acted upon from within, a greater amount of dilatation can be effected at one visit, and with much less pain to the patient than by passing consecutive bougies, which irritate the urethra, and owing to the abrupt increase of size, sometimes will not enter the stricture at all. If, in adopting the gradually dilating plan, the tube is very slowly passed, the pain will be trifling, and it will entirely cease, in the majority of instances, in a minute or two after the progress of the tube is discontinued. I cannot conceive any instrument more fitting, where gradual dilatation is desired; the blades can be expanded with the greatest nicety, in entire obedience to the desire of the surgeon, and the feelings of the patient, and as the dilatation is effected from within outwards, its force is expended in the most advantageous

direction. But, although dilatation may be employed where time is no object, and where the stricture is of a yielding character, it is utterly incapable of effecting what may be accomplished by passing the large tube at once, and splitting the stricture; the increased diameter being maintained by the after-passage of bougies. The rapidity with which the case will terminate, so far as only to require the passage of a bougie twice or thrice in the course of the year, will depend upon the number of strictures, and the irritability of the patient, more than it will upon their density. In some cases, although great force is required to split the obstruction, the urethra is to a certain extent insensible, and bears the after-passage of the bougie without the least manifestation of pain, whilst in others, more especially where there have been three or more impediments, and the urethra is very irritable, it is necessary to recede a size or two, owing to the spasms being so great during the introduction of the larger instrument, as to cause suffering.

I have lately had a marked example of this in an artilleryman, sent to me by my friend, Dr Gallway, Surgeon-major of the Royal Artillery. The patient had been the

subject of stricture about seven years; he had been through the Crimean war, and an inmate of the military hospital, more or less, ever since his return. Very many and long-continued attempts were made to get a catheter into his bladder without success, and Dr Gallway requested me to meet him in consultation upon the case. I did so, but was equally unsuccessful in passing a catheter. I therefore requested Dr Gallway to allow him to be admitted into the Westminster Hospital, to which he consentcd, and after several trials, I at last succeedcd in passing No. 1 through four obstructions into the bladder. As the patient was excessively nervous and irritable, I delayed splitting the stricture until No. 2 was attained, when the stricture was split with the No. 10 tube, and a 10 catheter immediately passed: he did not suffer from the operation in the slightest degree, and his urine was passed in an improved stream. On the second day from the operation, I attempted to pass the No. 10, but the spasm was so persistent that I preferred having recourse to No. 8 rather than give him pain; and I have been up to the present, now three weeks after the operation, content with that size, which passes with great casc, but still excites spasm. I havc no ques-

tion that in a little time No. 10 may be again used. The urethra must necessarily remain sore under such circumstances, and thus excites an amount of spasm which, by grasping the catheter, adds to the patient's suffering.

In conclusion, I may add, that in advocating the treatment of stricture by rupture I claim simply that credit which attaches to the publication of a series of interesting cases (examples of many others) which have been subjected to this novel treatment. That the principle upon which the instrument is constructed is as old as the hills, and that the power of the wedge has been known as long as the simplest rules of mechanics have been taught, I freely admit, but I have yet to learn that that principle has been heretofore applied to the treatment of stricture of the urethra in the manner detailed above, and with such highly satisfactory results.

Since the foregoing pages were written, I have had an opportunity of ascertaining what is the exact condition of the urethra when the stricture has been split after death.

A man was admitted under me into the Westminster Hospital in Oct., 1861. He had been the subject of stricture for eighteen years, and for the last twelve years the bladder had been relieved with increasing difficulty until he could only pass his water in drops. I endeavoured to introduce a No. 1 catheter, but found the impediment too contracted to admit even that size, and he was sent to bed, with directions to take castor-oil and remain quiet for a few days. In the meantime he was attacked with fever, and he died on Sunday, Nov. 10th. The friends objecting to a general *post-mortem* examination, I ultimately succeeded in persuading them to permit the urethra to be examined, which I was exceedingly anxious to do, for the purpose of ascertaining what was the precise effect produced by the passage of the dilator and its large tube. With some difficulty I introduced the dilator through two strictures, one within four inches of the meatus, and the second at the bulb, both apparently about half an inch long. The sensation was

like that I have frequently experienced during life, and the dilator having fairly reached the bladder, I passed the No. 12 tube, split the strictures, and before withdrawing it, rotated the dilator in the manner already described. My friend, Mr Heath, now removed the penis, with a portion of the bladder and rectum, and having laid open the urethra, the two strictures, as is shown in the drawing, were found to be split at the under portion of the canal, the rent being directly in the median line, and limited to the extent of the obstruction. The contiguous structures were uninjured, and the divided mucous membrane gaped to an extent sufficient to permit the passage of a large bougie.

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